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Structural effects on the electronic properties of epitaxially strained $RNiO_3$ thin films I.C. TUNG[1], Department of Materials Science and Engineering, Northwestern University, JIAN LIU, B. GRAY, J. CHAKHALIAN, Department of Physics, University of Arkansas, J. RONDINELLI, P. RYAN, J.W. KIM, Advanced Photon Source, Argonne National Laboratory, M.J. BEDZYK, Department of Materials Science and Engineering, Northwestern University, J.W. FREELAND, Advanced Photon Source, Argonne National Laboratory — Since the metal–insulator (MI) transition is a hallmark of strongly correlated materials, understanding the behavior of the MI transition of $RNiO_3$ (R=rare earth) thin films subjected to confinement, lattice misfit and broken symmetry at the interface in the ultra-thin limit is fundamentally and technologically important [1]. Here we present a study of the effect of the lattice symmetry with epitaxial strain in thin films of $LaNiO_3$ and $NdNiO_3$ grown on $SrTiO_3$(001) substrates by pulsed laser deposition. A combination of x-ray diffraction, soft x-ray absorption spectroscopy, and temperature-dependent resistivity has been applied to elucidate structural and electronic properties of the samples. Work at the Advanced Photon Source, Argonne is supported by the U.S. Department of Energy, Office of Science under Contract No. DE-AC02-06CH11357.

[1] Jian. Liu et al., Appl. Phys. Lett. 96, 233110 (2010).

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